

In the Claims

1-52 (canceled)

53. (new). An isolated polynucleotide encoding a polypeptide selected from the group consisting of:

- a) a polypeptide comprising the sequence of SEQ ID NO: 3; or
- b) a polypeptide comprising a fragment of at least 10 consecutive amino acids of SEQ ID NO: 3;

wherein said isolated polynucleotide encodes a polypeptide that has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3, antimicrobial activity, and cytotoxic activity.

54 (new). The isolated polynucleotide according to claim 53, wherein said polynucleotide encodes a polypeptide fragment comprising at least 15 consecutive amino acids.

55 (new). The isolated polynucleotide according to claim 53, wherein said polynucleotide encodes a polypeptide comprising the sequence of SEQ ID NO: 3.

56 (new). The isolated polynucleotide according to claim 53, wherein said polynucleotide encodes a polypeptide comprising a fragment of at least 10 consecutive amino acids of the polypeptide of SEQ ID NO: 3.

57 (new). The isolated polynucleotide according to claim 53, wherein said polynucleotide comprises the sequence of SEQ ID NO:2 or a fragment thereof.

58 (new). An isolated polynucleotide encoding a polypeptide comprising:

- a) a signal peptide comprising the sequence of SEQ ID NO: 4;

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- b) a proregion comprising the sequence of SEQ ID NO:5;
- c) a mature peptide comprising the sequence SEQ ID NO: 6;
- d) a polypeptide comprising an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID NO: 4, SEQ ID NO:5, or SEQ ID NO: 6; or
- e) a fragment comprising at least 10 consecutive amino acids of SEQ ID NO: 4, SEQ ID NO: 6, or SEQ ID NO: 6;

wherein said signal peptide has a function selected from the group consisting of: causes intra- or extracellular secretion of a polypeptide; is recognized by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 4; and combinations thereof;

wherein said proregion has a function selected from the group consisting of: inactivates the precursor form of the defensin molecule; provides a support for the acquisition of the active conformation of the mature peptide; is recognized by an antibody specific for the polypeptide of NO: 3 or SEQ ID NO: 5; and combinations thereof;

wherein said mature peptide has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of NO: 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity;

wherein said fragment of SEQ ID NO: 4 has a function selected from the group consisting of: causes intra- or extracellular secretion of a polypeptide; is recognized by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 4; and combinations thereof;

wherein said fragment of SEQ ID NO:5 has a function selected from the group consisting of: inactivates the precursor form of the defensin molecule; provides a support for the acquisition of the active conformation of the mature peptide; is recognized by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 5; and combinations thereof; and

wherein said fragment of SEQ ID NO: 6 has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity.

59 (new). The isolated polynucleotide according to claim 58, wherein said polynucleotide encodes a polypeptide comprising a signal peptide comprising the sequence of SEQ ID NO: 4.

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60 (new). The isolated polynucleotide according to claim 54, wherein said polynucleotide encodes a polypeptide comprising a proregion comprising the sequence of SEQ ID NO:5.

61 (new). The isolated polynucleotide according to claim 54, wherein said polynucleotide encodes a polypeptide comprising a mature peptide comprising the sequence of SEQ ID NO: 6.

62 (new). The isolated polynucleotide according to claim 54, wherein said polynucleotide encodes a polypeptide comprising an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID NO: 4, SEQ ID NO:5, or SEQ ID NO: 6.

63 (new). The isolated polynucleotide according to claim 54, wherein said polynucleotide encodes a polypeptide comprising a fragment of at least 10 consecutive amino acids of the signal peptide comprising the sequence of SEQ ID NO: 4.

64 (new). The isolated polynucleotide according to claim 54, wherein said polynucleotide encodes a polypeptide comprising a fragment of at least 10 consecutive amino acids of a proregion comprising the sequence of SEQ ID NO:5.

65 (new). The isolated polynucleotide according to claim 54, wherein said polynucleotide encodes a polypeptide comprising a fragment of at least 10 consecutive amino acids of a mature peptide comprising the sequence of SEQ ID NO: 6.

66 (new). The isolated polynucleotide according to claim 54, wherein said polynucleotide encodes a polypeptide comprising at least 15 consecutive amino acids.

67 (new). The isolated polynucleotide according to claim 62, wherein said polynucleotide encodes a polypeptide having an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID NO: 4.

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68 (new). The isolated polynucleotide according to claim 62, wherein said polynucleotide encodes a polypeptide having an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID NO:5.

69 (new). The isolated polynucleotide according to claim 62, wherein said polynucleotide encodes a polypeptide having an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID NO: 6.

70 (new). The isolated polynucleotide according to claim 54, wherein said polynucleotide comprises the sequence of SEQ ID NO:2 or a fragment thereof.

71 (new). An isolated polynucleotide encoding a polypeptide selected from the group consisting of:

- a) a polypeptide comprising the sequence of SEQ ID NO: 6;
- b) a polypeptide comprising an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID NO: 6; and
- c) a polypeptide comprising a fragment of at least 10 consecutive amino acids of the sequence of SEQ ID NO: 6;

wherein said isolated polynucleotide encodes a polypeptide that has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity.

72 (new). The isolated polynucleotide according to claim 71, wherein said polynucleotide comprises the sequence of SEQ ID NO:2 or a fragment thereof.

73 (new). The isolated polynucleotide according to claim 71, wherein said polynucleotide encodes a polypeptide comprising the sequence of SEQ ID NO: 6.

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74 (new). The isolated polynucleotide according to claim 71, wherein said polynucleotide encodes a polypeptide comprising an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID NO: 6.

75 (new). The isolated polynucleotide according to claim 71, wherein said polynucleotide encodes a polypeptide comprising a fragment of at least 10 consecutive amino acids of the sequence of SEQ ID NO: 6.

76 (new). The isolated polynucleotide according to claim 71, wherein said polynucleotide encodes a polypeptide comprising at least 15 consecutive amino acids.

77 (new). A vector comprising a polynucleotide encoding a polypeptide selected from the group consisting of:

- a) a polypeptide comprising the sequence of SEQ ID NO: 3;
- b) a polypeptide comprising an amino acid sequence at least 80% identical over the full length to the amino acid sequence of SEQ ID NO: 3; and
- c) a polypeptide comprising a fragment of at least 10 consecutive amino acids of SEQ ID NO: 3;

wherein said polynucleotide encodes a polypeptide that has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3, antimicrobial activity, and cytotoxic activity.

78 (new). The vector according to claim 77, wherein said polynucleotide comprises the sequence of SEQ ID NO:2 or a fragment thereof.

79 (new). The vector according to claim 77, further comprising elements ensuring the expression of said polynucleotide in a host cell.

80 (new). A vector comprising a polynucleotide encoding a polypeptide comprising:

- a) a signal peptide comprising the sequence of SEQ ID NO: 4;
- b) a proregion comprising the sequence of SEQ ID NO:5;
- c) a mature peptide comprising the sequence SEQ ID NO: 6;
- d) a polypeptide comprising an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID NO: 4, SEQ ID NO:5, or SEQ ID NO: 6; or
- e) a fragment comprising at least 10 consecutive amino acids of SEQ ID NO: 4, SEQ ID NO:5, or SEQ ID NO: 6;

wherein said signal peptide has a function selected from the group consisting of: causes intra- or extracellular secretion of a polypeptide; is recognized by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 4; and combinations thereof;

wherein said proregion has a function selected from the group consisting of: inactivates the precursor form of the defensin molecule; provides a support for the acquisition of the active conformation of the mature peptide; is recognized by an antibody specific for the polypeptide of NO: 3 or SEQ ID NO: 5; and combinations thereof;

wherein said mature peptide has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of NO: 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity;

wherein said fragment of SEQ ID NO: 4 has a function selected from the group consisting of: causes intra- or extracellular secretion of a polypeptide; is recognized by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 4; and combinations thereof;

wherein said fragment of SEQ ID NO:5 has a function selected from the group consisting of: inactivates the precursor form of the defensin molecule; provides a support for the acquisition of the active conformation of the mature peptide; is recognized by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 5; and combinations thereof; and

wherein said fragment of SEQ ID NO: 6 has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity.

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81 (new). The vector according to claim 80, wherein said polynucleotide comprises the sequence of SEQ ID NO:2 or a fragment thereof.

82 (new). The vector according to claim 80, further comprising elements ensuring the expression of said polynucleotide in a host cell.

83 (new). A vector comprising a polynucleotide encoding a polypeptide selected from the group consisting of:

- a) a polypeptide comprising the sequence of SEQ ID NO: 6;
- b) a polypeptide comprising an amino acid sequence at least 80% identical over the full length to the amino acid sequence of SEQ ID NO: 6; and
- c) a polypeptide comprising a fragment of at least 10 consecutive amino acids of the sequence of SEQ ID NO: 6;

wherein said polynucleotide encodes a polypeptide that has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity.

84 (new). The vector according to claim 83, wherein said polynucleotide comprises the sequence of SEQ ID NO:2 or a fragment thereof.

85 (new). The vector according to claim 83, further comprising elements ensuring the expression of said polynucleotide in a host cell.

86 (new). A host cell transformed with a vector comprising a polynucleotide encoding a polypeptide selected from the group consisting of:

- a) a polypeptide comprising the sequence of SEQ ID NO: 3;
- b) a polypeptide comprising an amino acid sequence at least 80% identical over the full length to the amino acid sequence of SEQ ID NO: 3; and

c) a polypeptide comprising a fragment of at least 10 consecutive amino acids of SEQ ID NO: 3;

wherein said polynucleotide encodes a polypeptide that has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3, antimicrobial activity, and cytotoxic activity.

87 (new). The host cell according to claim 86, wherein said polynucleotide comprises the sequence of SEQ ID NO:2 or a fragment thereof.

88 (new). The host cell according to claim 86, wherein said vector further comprises elements ensuring the expression of said polynucleotide in said host cell.

89 (new). A host cell transformed with a vector comprising a polynucleotide encoding a polypeptide comprising:

- a) a signal peptide comprising the sequence of SEQ ID NO: 4;
- b) a proregion comprising the sequence of SEQ ID NO:5;
- c) a mature peptide comprising the sequence SEQ ID NO: 6;
- d) a polypeptide comprising an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID NO: 4, SEQ ID NO:5, or SEQ ID NO: 6; or
- e) a fragment comprising at least 10 consecutive amino acids of SEQ ID NO: 4, SEQ ID NO:5, or SEQ ID NO: 6;

wherein said signal peptide has a function selected from the group consisting of: causes intra- or extracellular secretion of a polypeptide; is recognized by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 4; and combinations thereof;

wherein said proregion has a function selected from the group consisting of: inactivates the precursor form of the defensin molecule; provides a support for the acquisition of the active conformation of the mature peptide; is recognized by an antibody specific for the polypeptide of NO: 3 or SEQ ID NO: 5; and combinations thereof;

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wherein said mature peptide has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of NO: 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity;

wherein said fragment of SEQ ID NO: 4 has a function selected from the group consisting of: causes intra- or extracellular secretion of a polypeptide; is recognized by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 4; and combinations thereof;

wherein said fragment of SEQ ID NO: 5 has a function selected from the group consisting of: inactivates the precursor form of the defensin molecule; provides a support for the acquisition of the active conformation of the mature peptide; is recognized by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 5; and combinations thereof; and

wherein said fragment of SEQ ID NO: 6 has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity.

90 (new). The host cell according to claim 89, wherein said polynucleotide comprises the sequence of SEQ ID NO:2 or a fragment thereof.

91 (new). The host cell according to claim 89, wherein said vector further comprises elements ensuring the expression of said polynucleotide in said host cell.

92 (new). A host cell comprising a vector comprising a polynucleotide encoding a polypeptide selected from the group consisting of:

- a) a polypeptide comprising the sequence of SEQ ID NO: 6;
- b) a polypeptide comprising an amino acid sequence at least 80% identical over the full length to the amino acid sequence of SEQ ID NO: 6; and
- c) a polypeptide comprising a fragment of at least 10 consecutive amino acids of the sequence of SEQ ID NO: 6;

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wherein said polynucleotide encodes a polypeptide that has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity.

93 (new). The host cell according to claim 92, wherein said polynucleotide comprises the sequence of SEQ ID NO:2 or a fragment thereof.

94 (new). The host cell according to claim 92, wherein said vector further comprises elements ensuring the expression of said polynucleotide in said host cell.

95 (new). A method of producing a polypeptide comprising culturing a host cell transformed with a vector comprising a polynucleotide encoding a polypeptide selected from the group consisting of:

- a) a polypeptide comprising the sequence of SEQ ID NO: 3;
- b) a polypeptide comprising an amino acid sequence at least 80% identical over the full length to the amino acid sequence of SEQ ID NO: 3; and
- c) a polypeptide comprising a fragment of at least 10 consecutive amino acids of SEQ ID NO: 3;

wherein said polynucleotide encodes a polypeptide that has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3, antimicrobial activity, and cytotoxic activity.

96 (new). The method according to claim 95, wherein said polynucleotide comprises the sequence of SEQ ID NO:2 or a fragment thereof.

97 (new). The method according to claim 95, wherein said vector further comprises elements ensuring the expression of said polynucleotide in said host cell.

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98 (new). A method of producing a polypeptide comprising culturing a host cell transformed with a vector comprising a polynucleotide encoding a polypeptide comprising:

- a) a signal peptide comprising the sequence of SEQ ID NO: 4;
- b) a proregion comprising the sequence of SEQ ID NO:5;
- c) a mature peptide comprising the sequence SEQ ID NO: 6;
- d) a polypeptide comprising an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID NO: 4, SEQ ID NO:5, or SEQ ID NO: 6; or
- e) a fragment comprising at least 10 consecutive amino acids of SEQ ID NO: 4, SEQ ID NO:5, or SEQ ID NO: 6;

wherein said signal peptide has a function selected from the group consisting of: causes intra- or extracellular secretion of a polypeptide; is recognized by an antibody specific for the polypeptide of SEQ ID NO:3 or SEQ ID NO: 4; and combinations thereof;

wherein said proregion has a function selected from the group consisting of: inactivates the precursor form of the defensin molecule; provides a support for the acquisition of the active conformation of the mature peptide; is recognized by an antibody specific for the polypeptide of NO:3 or SEQ ID NO: 5; and combinations thereof;

wherein said mature peptide has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of NO:3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity;

wherein said fragment of SEQ ID NO:4 has a function selected from the group consisting of: causes intra- or extracellular secretion of a polypeptide; is recognized by an antibody specific for the polypeptide of SEQ ID NO:3 or SEQ ID NO: 4; and combinations thereof;

wherein said fragment of SEQ ID NO:5 has a function selected from the group consisting of: inactivates the precursor form of the defensin molecule; provides a support for the acquisition of the active conformation of the mature peptide; is recognized by an antibody specific for the polypeptide of SEQ ID NO:3 or SEQ ID NO: 5; and combinations thereof; and

wherein said fragment of SEQ ID NO:6 has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO:3 or SEQ ID NO:6, antimicrobial activity, and cytotoxic activity.

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99 (new). The method according to claim 98, wherein said polynucleotide comprises the sequence of SEQ ID NO:2 or a fragment thereof.

100 (new). The method according to claim 98, wherein said vector further comprises elements ensuring the expression of said polynucleotide in said host cell.

101 (new). A method of producing a polypeptide comprising culturing a host cell transformed with a vector comprising a polynucleotide encoding a polypeptide selected from the group consisting of:

- a) a polypeptide comprising the sequence of SEQ ID NO: 6;
- b) a polypeptide comprising an amino acid sequence at least 80% identical over the full length to the amino acid sequence of SEQ ID NO: 6; and
- c) a polypeptide comprising a fragment of at least 10 consecutive amino acids of the sequence of SEQ ID NO: 6;

wherein said polynucleotide encodes a polypeptide that has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity.

102 (new). The method according to claim 101, wherein said polynucleotide comprises the sequence of SEQ ID NO:2 or a fragment thereof.

103 (new). The method according to claim 101, wherein said vector further comprises elements ensuring the expression of said polynucleotide in said host cell.